

WHAT IS CLAIMED IS

Sub B1
1. An optical disc recording/reproduction apparatus for recording and/or reproducing a data by applying a beam from an optical head unit through a substrate of an optical disc onto/from a recording layer of the optical disc through, wherein

said substrate of said optical disc is 0.3 mm or below, and said optical head unit comprises:

an objective lens for converging an incident beam and emitting the beam toward said optical disc;

a forward lens for converging the beam introduced through said objective lens and applying the beam to said optical disc;

a lens holder where said objective lens and said forward lens are fixed; and

an actuator for driving said objective lens and said forward lens as a unitary block and controlling at least focusing,

said objective lens and said forward lens having a total numerical aperture of 0.8 or above.

2. an optical disc recording/reproduction apparatus as claimed in Claim 1, wherein said forward lens and said substrate define a working distance of 50 μm to 500 μm .

3. An optical disc recording/reproduction apparatus as claimed in Claim 1, wherein said forward lens and said objective lens have aspherical surfaces into/from which said

beam is introduced.

4. An optical disc recording/reproduction apparatus as claimed in Claim 1, wherein said forward lens and said objective lens are fixed at a predetermined distance in said lens holder.

5. An optical disc recording/reproduction apparatus as claimed in Claim 1, wherein said actuator carries out tracking control of said forward lens and said objective lens.

6. An optical disc recording/reproduction apparatus as claimed in Claim 1, said apparatus further comprises a magnetic head for applying a magnetic field to said recording layer of said optical disc.

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Sub B2 7. An optical disc recording/reproduction method for applying a beam from an optical head having an objective lens for converging and emitting the beam toward an optical disc and a forward lens for converging the beam from said objective lens and emitting the beam to a recording layer through a substrate of said optical disc so as to record or reproduce a data onto/from said recording layer, wherein

said objective lens and said forward lens are driven as a unitary block for focus control and said substrate of said optical disc has a thickness of 0.3 mm or below, and

said objective lens and said forward lens have a total

numerical aperture of 0.8 or above.

8. An optical head unit for applying a beam through a substrate to a recording layer of an optical disc so as to record and/or reproduce a data onto/from said recording layer, said optical head unit comprising:

a first lens for converging a coming beam and emitting the beam toward said optical disc;

a second lens for converging the beam coming from said first lens and emitting the beam to said optical disc;

a lens holder in which said first lens and said second lens are fixed at a predetermined distance; and

an actuator for driving said lens holder so as to carry out at least focus control,

wherein said first lens and said second lens have a total numerical aperture of 0.8 or above.

9. An optical head unit as claimed in Claim 8, wherein said second lens and said substrate define a working distance of 50 μm to 500 μm .

10. An optical head unit as claimed in Claim 8, wherein said first lens and said second lens have aspherical surfaces from/to which said beam is introduced.

11. An optical head unit as claimed in Claim 8, wherein said actuator drives said lens holder for carrying out tracking

control.

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